

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
19 May 2005 (19.05.2005)

PCT

(10) International Publication Number  
**WO 2005/045078 A1**

(51) International Patent Classification<sup>7</sup>: **C22B 3/42**

28, FI-28100 Pori (FI). VUOKKO, Matti [FI/FI]; Turkkurintie 2 as. 3, FI-28400 Pori (FI).

(21) International Application Number:  
PCT/FI2004/000629

(74) Agent: **OUTOKUMPU OYJ, INTELLECTUAL PROPERTY MANAGEMENT**; P.O. Box 27, FI-02201 Espoo (FI).

(22) International Filing Date: 22 October 2004 (22.10.2004)

(25) Filing Language: English

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(26) Publication Language: English

(30) Priority Data:  
20031615 7 November 2003 (07.11.2003) FI

(71) Applicant (for all designated States except US): **OUTOKUMPU OYJ** [FI/FI]; Riihitontuntie 7, FI-02200 Espoo (FI).

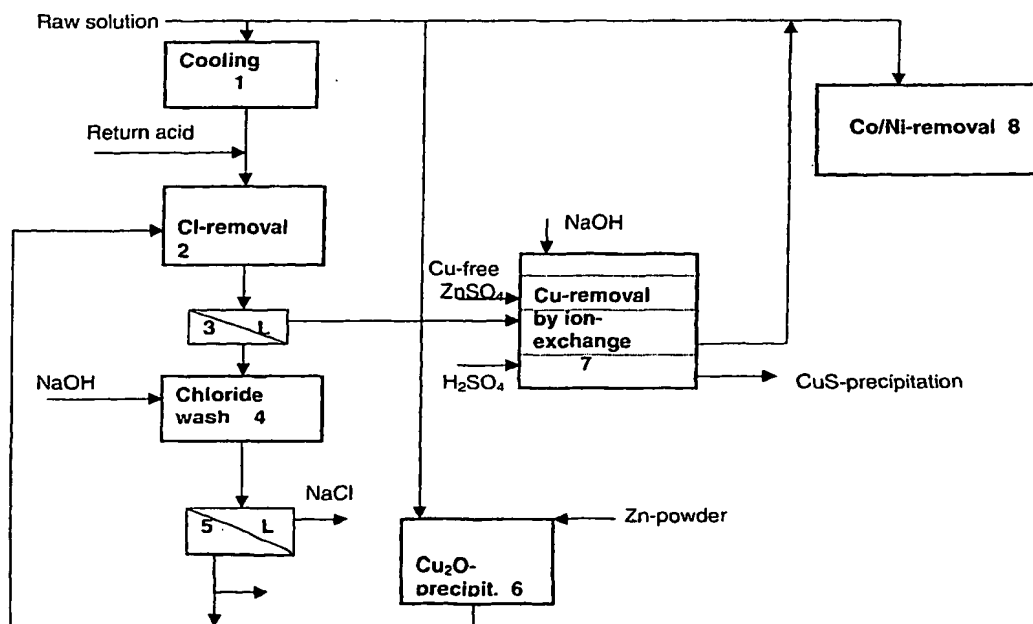
(72) Inventors; and

(75) Inventors/Applicants (for US only): **LEHTINEN, Leena** [FI/FI]; Jaakontie 20 as. 3, FI-28500 Pori (FI). **LAHTINEN, Marko** [FI/FI]; Aumankuja 10 as. 3, FI-28360 Pori (FI). **JYRÄLÄ, Marika** [FI/FI]; Asemapäällikönkatu 2 as.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI,

[Continued on next page]

(54) Title: A METHOD FOR THE REMOVAL OF COPPER FROM A ZINC SULPHATE SOLUTION



(57) Abstract: The purpose of the invention is to remove copper selectively from a concentrated zinc sulphate solution by ion exchange. The method enables a significant reduction in the use of zinc powder during the solution purification of zinc sulphate solution and makes possible to avoid usage of arsenic or antimony trioxides as a precipitation chemical. The method is to be combined with the chloride removal that occurs as a sub-stage of solution purification.

WO 2005/045078 A1



SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Declarations under Rule 4.17:**

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations* AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, NA,

SD, SL, SZ, TZ, UG, ZM, ZW). *Eurasian patent* (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), *European patent* (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), *OAPI patent* (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

- *of inventorship (Rule 4.17(iv)) for US only*

**Published:**

- *with international search report*

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*